

# Atlantic Richfield Company

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4 Centerpointe Drive, 4-435  
La Palma, CA 90623  
Direct: (714) 228-6770

December 5, 2013

Mr. Steven Way  
On-Scene Coordinator  
Emergency Response Program (8EPR-SA)  
US EPA Region 8  
1595 Wynkoop Street  
Denver, CO 80202-1129

**Delivered via e-mail**

**Subject: November 2013 Monthly Progress Report  
Rico-Argentine Mine Site – Rico Tunnels  
Operable Unit OU01, Rico, Colorado**

Dear Mr. Way,

This progress report describes activities conducted during the month of November 2013 at the Rico-Argentine Mine Site (site) and activities anticipated to occur during the upcoming month. These activities are organized by task as identified in the Removal Action Work Plan. This progress report is being submitted in accordance with Paragraph 35.a of the Unilateral Administrative Order for Removal Action (the "UAO"), dated March 17, 2011.

## **ACTIVITIES FOR NOVEMBER**

This section describes significant developments during the preceding period including actions performed and any problems encountered during this reporting period.

### **Site-Wide Activities**

- Completed demobilization of 2013 construction contractors including equipment and personnel.

### **Task A – Pre-Design and Ongoing Site Monitoring**

- Submitted the Preliminary August 2013 Surface Water and Ground Water Sampling and Flow Monitoring data
- Preparing and reviewing August, September and October 2013 Surface Water and Ground Water Sampling and Flow Monitoring Reports prior to submittal to EPA and posting to the project SharePoint site.
- The November water sampling event was initiated on November 12, 2013 and completed November 20, 2013.
- November sampling event groundwater samples and water levels were obtained from the following groundwater wells: GW-1, GW-3, GW-4, GW-5, GW-7, EB-1, EB-2, MW-101, MW-102, MW-103, MW-104, CHV-101S, P13-102, P13-103, MW-1 DEEP, MW-1 SHALLOW, MW-2 DEEP, MW-3 DEEP, MW-4 DEEP, MW-4 SHALLOW, MW-5 DEEP, MW-5 SHALLOW, MW-6 DEEP, MW-6 SHALLOW, and angle boreholes AT-2 and BAH-01. The following wells were found to be dry: MW-202, MW-2 SHALLOW, and MW-3 SHALLOW.
- November sampling event groundwater samples and water levels were obtained from the following new groundwater wells: MW-105, MW-106, MW-107, MW-108D, MW-108S, MW-109S, MW-110, MW-201, MW-203, MW-205, MW-207, MW-208, CHV-101D, CHV-101M, CHV-101U, PZ-1, and PZ-2.

- Groundwater well MW-204 upper casing repaired and sample collection was completed this month.
- During the November sampling event, surface water samples were collected from St. Louis Ponds locations DR-3, DR-4, DR-5 and DR-6.
- During the November sampling event, Dolores River water samples and flow measurements were collected from DR-1, DR-2, DR-7, DR-4-SW, and DR-G. Grab samples as well as multi-point composite samples were obtained from the referenced river locations with the exception of DR-G, from which only a grab sample was obtained.
- During November, flumes were inspected for debris. The flumes were cleared as required.
- Downloaded available flume data for October 2013 from the Parshall flume data loggers. The most recent data was obtained from the OTT PLS pressure transducer and ultra-sonic level sensor at north flume (DR-3) and from OTT Orpheus Mini at south flume (DR-6).
- Conducted inspection of the pond system spillways, pipes, water levels and general conditions. Overall condition of the pond system was good. All spillways and pipes were observed to be flowing without obstruction.
- Continued work on overall site Data Management System (EQuIS) development. A web-based system with site data which can be queried in a tabular format has been set up and is currently being tested and refined. A web-based system with site data which can be queried from a map is complete and being tested internally.
- Additional evaluation of potential improvements on field water data gathering and telemetry. Started preparation for solar panel and Doppler flow meter installation at DR-2 and DR-6 by installing conduit and solar panel support poles. Continued work on the antenna permit with the Town of Rico.
- Completed vertical drilling during November. Completed the last 4 monitoring wells, MW-110, PZ-1, MW-108D, and MW-108S, total drilled 124 feet. Conducted 4 standard penetration tests on 1 of the borings.
- Completed initial monitoring well development consisting of surging and bailing fines from final 5 monitoring wells, MW-109D, MW-110, MW-109S, PZ-1 and MW-108S. Completed purging 14 monitoring wells with a submersible pump to reduce turbidity and finalize well development - completed monitoring wells MW-106, MW-105, MW-207, MW-201, CHV-101M, CHV-101U, MW-109S, MW-110, MW-108D, PZ-1, MW-108S, CHV-101U, CHV-101D, and MW-203
- Completed 17 flush mount monitoring well completions and 11 above grade completions (8 of these surface completion were for monitoring wells installed before 2013).
- Due to artesian conditions, monitoring well MW-109D (boring DG-1D) was abandoned by plugging in compliance with State of Colorado requirements. Prior to abandonment, head and flow measurements and water samples were collected from MW-109D (boring DG-1D).
- COLOG completed downhole geophysical logging on 5 monitoring wells and recorded video on incline borehole BAH-01. Performed sonar, Corehole Dynamic Flowmeter (CDFM), and colloidal borescope on inclined boring AT-2.
- All drilling equipment and personnel were demobilized from the site.
- Weekly Storm Water Management Plan (SWMP) inspections were performed and maintenance conducted.

#### **Task B – Management of Precipitation Solids in the Upper Settling Ponds**

- St. Louis discharge water was diverted to Pond 18 during onsite hours and diverted back to Pond 15 during off-site hours. The water was diverted for 6 days in the first half of the month. The water reached approximately 3.5 feet below the outlet elevation. The dike was monitored and no leaks or seeps were identified during any of the inspections. The St. Louis discharge water was returned solely to Pond 15 on the evening of November 19 and remained routed to Pond 15 through month end.
- Approximately 200 cubic yards of wet solids were removed from Pond 12 east bank by mechanical excavation to finish the solids removal task associated with this pond. The solids in this area were not removed by dredge due to the shallow water prohibiting flotation of the equipment close to the east bank.



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- The St. Louis Pond system embankments flow and general conditions were inspected during November 2013. The ponds had adequate freeboard through the month. Flow into and between the ponds is not blocked and overall the embankments appeared in good condition.
- Demobilized both dredges and all supporting equipment (electrical cables, floating pipes, generators, spillguards, pumps, etc.) from the site.
- The Pond 11 and 12 areas were cleared of all dredging materials and work debris as part of demobilization. The water management pipeline system, routing St Louis discharge water around the dredged ponds, was not dismantled and left in place as the piping will be needed for the Pond 14 removal planned in 2014.

#### **Task C – Design and Construction of a Solids Repository**

- Continued design of a phased solids repository at the South Stacked Repository – Option A (SSR-A) site.
- Continued work on geotechnical analyses of alternative solids drying facility and repository site, focusing current attention on Pond 13 and the SSR-A.
- Continued evaluation of geotechnical field and laboratory test data on Pond 18 solids placed in the Interim Drying Facility (IDF) in 2011.
- Worked on establishing parameters for shear strength and consolidation testing of surrogate lime-amended treatment solids.
- Continued preparation of the Dolores County Land Use Application and associated documents for a Certificate of Designation for the solids repository.
- Continued preparation of the Engineering Design and Operations Plan (ED&OP) for the Solids Repository for submittal to EPA and Dolores County for review by Colorado Department of Public Health and Environment.
- Continued work to secure lands needed for a permanent solids repository. The Small Tracts Act application was submitted to the USFS on October 21, 2013. (Inadvertently omitted from the October Monthly Status Report)

#### **Task D – Hydraulic Control Measures for the Collapsed Area of St. Louis Tunnel Adit**

- The incline boring CHI 101 was started with the south drill pad shaped and the access road re-grading finished. The borehole was set at a 12.2 degree angle and drilled to 113 ft. Following removal of the drilling tools, the borehole was cased to 40 ft and capped for future work and access.
- Excavated, logged, and sampled 2 test pits near the collapsed adit area. Samples were shipped for geotechnical/physical properties analysis.
- Initiated design of the proposed St. Louis Tunnel hydraulic control remedy which included continued drainage through the debris plug with sub-horizontal relief wells to control hydraulic head behind the debris plug, plus monitoring wells to evaluate hydraulic head in the tunnel.

#### **Task E – Source Water Investigations and Controls**

- Continued Blaine Tunnel water depth and flow monitoring behind the Blaine Coffey Dam and Blaine Flume. Flume data was downloaded on November 7, 2013, at which time the depth of water flowing through the flume was recorded to be approximately 1.36 inches, corresponding to a flow rate of approximately 2.2 gallons per minute (gpm).
- Continued preparation of a report to document Subtask E3 – Evaluation of Hydraulic Controls Alternatives.

#### **Task F – Water Treatment System Analysis and Design**

- Continued pilot-scale wetland treatability study activities.
  - Finalized a report documenting constructed wetland pilot-scale testing activities, observations, and analytical results. This report was submitted to the EPA on November 4, 2013.



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- An inspection was performed on November 7, 2013.
  - Flow through the pilot-scale wetland will be maintained until the matrix materials from the rock drain and wetland cell are re-used as inocula for the wetland demonstration.
- Continued development of a unified design and specifications package incorporating a demonstration-scale vertical flow wetland that complements and integrates with the existing horizontal flow wetland demonstration.

## **ACTIVITIES FOR UPCOMING MONTH**

This section describes developments expected to occur during the upcoming reporting period, including a schedule of work to be performed, anticipated problems and planned resolution of past or anticipated problems.

### **Site-Wide Activities**

- Update Winter Operations Plan for 2013/2014 water inspection activities.
- Review and finalize the draft avalanche hazard study report for the St. Louis Ponds Site and the Argentine Mill Site/Access Road.

### **Task A – Pre-Design and Ongoing Site Monitoring**

- Complete, review, and post the August and September 2013 Surface Water and Ground Water Sampling and Flow Monitoring Reports to the project SharePoint site during December 2013.  
<https://www.aecomonline.net/projects/Rico>
- Submit Preliminary September and October 2013 Surface Water and Ground Water sampling and flow data for the site.
- Review of the August, September, and October 2013 Surface Water and Ground Water Sampling and Flow Monitoring Reports.
- Due to winter weather hazards at the site, surface water and groundwater sampling/analyses and flow measurements are not expected to be collected during December. The possibility of not conducting this sampling and monitoring event was discussed and agreed upon with Steve Way, EPA.
- Post surface water quality data to the SharePoint site after QA/QC review; and submit EQuIS data downloads to URS/EPA pending completion of EQuIS database.
- Continue testing on the site Data Management System in preparation for system rollout.

### **Task B – Management of Precipitation Solids in the Upper Settling Ponds**

- Continue evaluation of calcine tailings/Pond 18 solids SPLP and associated geochemical testing.
- Continue routing St. Louis discharge to Pond 15.

### **Task C – Design and Construction of a Solids Repository**

- Continue design of a phased solids repository at the SSR-A site.
- Continue geotechnical analyses and review to support design of a permanent drying facility and repository, including ongoing laboratory testing.
- Continue preparation of the Dolores County Land Use Application and ED&OP for a Certificate of Designation for the solids repository.
- Continue efforts to secure access to lands needed for a permanent drying facility and solids repository.

### **Task D – Hydraulic Control Measures for the Collapsed Area of St. Louis Tunnel Adit**

- Continue evaluation of potential for in-mine storage of St. Louis Tunnel flows behind the planned bulkhead.



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- Continue detailed design for the hydraulic control measures for the collapsed area of the St. Louis Tunnel (adit).

#### **Task E – Source Water Investigations and Controls**

- Continue Blaine Tunnel water depth and flow monitoring behind the Blaine Coffey Dam and Blaine Flume.
- Finalize and submit to EPA a technical memorandum to document Subtask E3 – Evaluation of Hydraulic Controls Alternatives by December 31, 2013.

#### **Task F – Water Treatment System Analysis and Design**

- Continue pilot-scale wetland treatability study activities.
  - Maintain flow through the pilot-scale wetland until the matrix materials from the rock drain and wetland cell are re-used as inocula for the wetland demonstration.
- Continue wetland demonstration treatability study activities.
  - Finalize and submit to EPA the unified design and specifications package incorporating a demonstration-scale vertical flow wetland that complements and integrates with the existing horizontal flow wetland demonstration by December 31, 2013.
- Continue scoping additional data needs as necessary related to treatment system alternatives.

If you have any questions, please feel free to contact me at (951) 265-4277.

Sincerely,



Anthony R. Brown  
Project Manager  
Atlantic Richfield Company

cc: R. Halsey, Atlantic Richfield  
T. Moore, Atlantic Richfield  
C. Harris, Atlantic Richfield  
C. Sanchez, Anderson Engineering  
D. McCarthy, Copper Environmental Consulting  
T. Kreutz, AECOM  
D. Yadon, AECOM  
J. Decker, AECOM  
J. Christner, Weston Solutions, Inc.  
S. Riese, EnSci  
A. Cohen, Esq., Davis Graham & Stubbs  
W. Duffy, Esq., Davis Graham & Stubbs  
S. D'Cruz, Esq., Atlantic Richfield  
A. Piggott, Esq., U.S. EPA  
M. Lombardi, AMEC  
S. Archer, AMEC

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